Initial	Date
[illegible]	4/22/03
[illegible]	4-22-03

BA WTR
WR ND
Mail Stop 60189

APR 23 2003

Memorandum

To: Project Leader, Tewaukon National Wildlife Refuge

From: Chief, Division of Water Resources, Region 6 /S/ CHERYL E. WILKE

Subject: 2002-2003 Annual Water Use Report/Management Plan

The subject reports for Tewaukon and Storm Lake National Wildlife Refuges have been reviewed. The Tewaukon 2003 Plan will be forwarded to the State as the 2003 Operations Plan.

The Declaration of Filing for Storm Lake NWR lists storage of 729 acre-feet and seasonal use of 516 acre-feet ***NOT*** 522 acre-feet storage and 900 acre-feet seasonal as shown on your report. Please use the corrected information on future reports.

Attached is the signed approval page for your files.

Attachment

bcc:WR rf
RO rf
Refuges Supervisor (Shupe)
WTR:LCoe:lc:04/21/03
I:\WATERUSE\NO_DAKOT\02-03\03TEWAUK.03

TEWAUKON
NATIONAL WILDLIFE REFUGE

ANNUAL WATER MANAGEMENT PLAN
2002 WATER USE REPORTS
2003 WATER MANAGEMENT PLAN

Submitted by: _____ Date: 4/21/03
for Refuge Manager

Reviewed by: _____ Date: 4-22-03
Chief, Water Resources Div.

Reviewed by: _____ Date: 4/25/03
Refuge Supervisor, ND/SD

Approved by: _____ Date: 4/23/03
Regional Chief, NWRS

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Tewaukon National Wildlife Refuge Complex
9754 143½ Ave SE
Cayuga, ND 58013-9764

MEMORANDUM

To: National Wildlife Refuge System, ND/SD. MT Refuge Supervisor (60100)
Denver, CO

From: Refuge Manager, Tewaukon NWR Complex (62660)
Cayuga, ND

Subject: 2003 Annual Water Management Plan and 2002 Use Report

1. **List of Water Rights**

Water Right Filing No. 57: Declaration of Filing dated September 1, 1934 claimed 104 surface acres, for 397 acre-feet storage and 312 acre-feet seasonal use for Clouds Lake (Pool 8) now called Hepi Lake from unnamed tributary to Wild Rice River. Listed on the same sheet as Lake Tewaukon/White Lake, as per RO(EN) Marshall Fox's 11-14-83 memo. Water use in pools 5 through 10 is covered under this right, with Hepi Lake to be drawn down to fill these pools.

Water Right Filing No. 64: Declaration of Filing dated September 1, 1934, for Lake Tewaukon and East and West White Lake (including Cutler Marsh), 1417 surface acres, for 7198 acre-feet storage, 4251 acre-feet seasonal from Wild Rice River and unnamed tributary.

Permit #1261: 4852 acre-feet storage and 2287 acre-feet seasonal use, for a total of 7139 acre-feet from the Wild Rice River for fish and wildlife use. This permit covers additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh and West White Lake; 409 acre-feet seasonal use to replace water to be diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. Priority date December 28, 1964.

Tewaukon NWR #1262: 1,130 acre-feet yearly (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake, dated December 28, 1964, diversion from an unnamed creek in the SE1/4 NW1/4, Sec. 2.

Tewaukon NWR #1263: 686 acre-feet yearly for Mann Lake (total of 236 acre-feet comprised of 107 acre-feet storage and 129 acre-feet seasonal use) and Horseshoe Slough (total of 450 acre-feet comprised of 270 acre-feet storage and 180 acre-feet seasonal use) dated December 28, 1964, diversion from the Wild Rice River.

Tewaukon NWR #3816 Nickeson Tract: 571 acre-feet (474 acre-feet storage, 97 acre-feet annual use) for the Nickeson Bottoms, a tract jointly owned by the ND Game and Fish Department, US Bureau of Reclamation and US Fish and Wildlife Service (FWS). Diversion is from the Wild Rice River, W ½ Section 27, T. 130 N., LTL, R. 54 W.

Priority date August 15, 1985. Received perfected water permit on August 14, 1997. Recorded in the Register of Deeds, Sargent County on March 3, 1998.
In December 2001, the Service submitted an application for prescriptive water rights pursuant to the provisions of State Senate Bill No. 2182 for 859 acre feet.

2. Water Use - 2002

The year 2002 was a fairly dry year in terms of precipitation and temperatures. The average annual precipitation for southeastern North Dakota is 20 inches of rain and about 40 inches of snow.

Month	Temperatures Low (Average)	Temperatures High (Average)	Precipitation Rain	Precipitation Snow
January	3	16	N/A	3"
February	10	20	N/A	1"
March	29	45	N/A	6"
April	54	63	1.41"	N/A
May	62	74	1.67"	N/A
June	72	83	2.61	N/A
July	71	87	6.26"	N/A
August	74	89	2.33"	N/A
September	67	77	1.95"	N/A
October	50	65	0.28"	N/A
November	40	46	0.01"	4"
December	27	37	0.34"	.5"
Totals:	**N/A**	**N/A**	16.86"	14.5"

Below normal winter precipitation was recorded in 2002/2003, water levels did not maintain themselves with to existing water, rainfall and upstream water releases. There was however a slight drop in pool water levels as compared to last year. Water levels in pool 1 were dropped in August to facilitate bank stabilization work on the south shore along county road 5. Water from pools 2,3, and 4 were used to refill pool 1 with as much water as possible before freeze up. There was little to no flow into the Wild Rice River below dam 1 through the end of the year. At the beginning of 2003 we find ourselves in moderate drought conditions.

Pool 1 (Lake Tewaukon): Pool was filled April 11 at 1148.05. We maintained approximately full pool of 1148.00

through most of summer. Water levels peaked on July 12 at 1148.41. On August 2 we began gradual drawdown to help with bank reconstruction project until a low of 1146.87 on August 19. Boards were added on September 3 to raise pool to 1147.70. Freeze up occurred at elevation 1147.67

Parker Bay (east end of Lake Tewaukon): Because of dry conditions, there was no inflow from labelle Creek. Freeze up elevation was 1143.75Waterfowl, especially mallards and tundra swans, continued to utilize this pool in the fall migration period.

Pool 2 (Cutler Marsh): Water was collected in Pool 2 to refill pool 1 after bank stabilization project. Pool 2 peaked at 1153.85 on May 16. Water was then released into Pool 1 on September 3. The pool froze at 1148.

Pool 2A: We tried to maintain elevation at designated depth for ongoing invertebrate research project in this pool. Lack of precipitation caused level to fall to 1152 at freeze up.

Pool 3 (Maka Pool): Pool filled to management level of 1156 on April 11. Attempted to maintain this level through the summer, however there was low precipitation.. Boards were pulled on September 12 to refill pool 1. Freeze up occurred at 1152.75.

Pool 3A: Pool filled to approximately 1156 on April 11. Dropped over season to 1154 at freeze up.

Nickeson Bottoms: There were no inflows into this pool all year. Water dropped into pool 3 in September to an elevation of 1153. Freeze up level was 1152.75

Pool 4 (River Pool): Pool 4 peaked at 1159.95 on May 16. On September 16, at elevation 1159.25, we pulled boards to help refill pool 1. Freeze up at 1156.

Pool 5: Pool was dry in spring rip-rap was added to dike. There was not enough precipitation to refill pool. Freeze up occurred at 1156.

Pool 5A: Pool was dry in spring, there was no run off. Pool 5A was dry at freeze up elevation 1160.

Pool 6: Structure and dike breached. Pool dry at freeze up at 1163.

Pool 7: Pool 7 stafilled with local run off 1171on May 15. No additional inflows caused the pool to drop to 1168 (dry) at freeze up.

Pool 7A: Filled from Hepi Lae (pool 8) to approximately 1175.5 in spring. No additional inflows. Pool froze up nearly dry at 1171.

Pool 8 (Hepi Lake): Inflow from ditch to south filled pool to 1175.5 in May. No more inflows and below normal precipitation caused pool to drop to 1170.25 at freeze up.

Pool 9: Inflows from pool 8 filled the pool to approximately 1167. At that elevation water outflows into pool 4. Freeze up at approximately 1165.

Pool 10: Pool began year at 1173 there was no flow into this pool freeze up occurred at 1172.25

Pool 11 (West White Lake): This pool peaked at 1149.85 on April 11. Freeze up occurred at 1148.50

Pool 12 (East White Lake): Pool 12 received local run off from Pool 11 early in the year. By freeze up Pool 12 was at 1148.15.

Pool 13 (Mann Lake): No spring runoff to fill pool. Evaporation had lowered it to 1205 by freeze up.

Pool 14 (Sprague Lake): The lake peaked at 1214 in April. Drawn down to approx 1212.5 in early September to facilitate bank reconstruction. Freeze up at approx. 1212

Pool 16 (Horseshoe Slough Group): No spring inflows.

Pool A - Water flowed into B and C pools and then pumped out late in summer 2002 to bring pool to 1204.5 Freeze up occurred at 1204 (dry).

Pool B - Water pumped late summer into B North to facilitate replacement of Pool B structure and dike repairs. Freeze up at 1204.

Pool C - Water pumped late summer into C South and C East to facilitate replacement of Pool C structure and dike repairs. Freeze up at 1204.

B West - Water in flows from B North. Freeze up at 1206.

B North - Water pumped from B Pool in late summer. Freeze up at 1206.

C North - No Inflows freeze up at 1206

C South and C West - Inflows from late summer pumping of C Pool. Freeze up at 1206.

3. Impoundment Data

Please see the attached chart for capacities for each pool at various elevations. No formal inflow/outflow records were maintained. There are currently no functional gauges on pools that relate to mean sea level. Please see Section #2 above for elevation changes for the various pools.

4. 2003 Plans

The following plans for the water levels in the pools are the best levels for attaining management objectives considering the dry conditions we find ourselves in. Because of low water conditions, conditions should be ideal to install new staff gauges and data loggers as needed.

Pool 1 (Lake Tewaukon): Our first priority will be to try and fill this pool to 1148 and maintain that elevation.

Parker Bay (east end of Lake Tewaukon): If possible, maintain a 2½-3 foot depth for waterfowl production.

Pool 2 (Cutler Marsh): This pool will be maintained at 1152.

Pool 2A: Maintain at a water level of approximately 1153. A guide for this level will be the stake indicating the best level for invertebrate monitoring. This will allow a 4 foot water depth for brood use. Invertebrate samplers will continue to collect invertebrates during the year. We will try to maintain this level.

Pool 3 (Maka Pool): Maintain pool at 1156 to store limited water for Pool 1 and reduce backflows from Pool 2. If needed, supply water to Pools 2A and 3A.

Pool 3A: The pool will be filled to a level of 1156 for brood use. If needed obtain water from Pool 3 during spring flows.

Nickeson Bottoms: If possible, we will keep inflows to a minimum and allow evaporation to take the water down to 1150 in hopes that vegetation will reestablish..

Pool 4 (River Pool): Draw down to dry if possible to reestablish vegetation. .

Pool 5: Try to fill and maintain elevation at 1162.

Pool 5A: Allow to fill 3-4 feet (elevation 1164) with water diverted from Hepi Lake.

Pool 6: Dike is currently breached. We will be repairing as soon as possible and moving water in order to maintain a level of 1167.

Pool 7: Currently dry. If possible, refill and maintain at a level of 1174. Current density of cattail makes excellent cover for northern harriers, marsh wrens, bitterns, and red-winged blackbirds.

Pool 7A: Divert water from Hepi Lake during spring runoff to fill to a maximum depth to flood cattails and maintain water through out the summer (elevation 1178 minimum). The pool will dry out rapidly through an average summer due to the evaporation of its large surface area. For Pool 7A's active rookery, water levels should be managed to keep 3 feet of water in the pool throughout the summer and fall. Also maintain sufficient water to avoid a botulism problem (which occurred in 1999 due to structure failure).

Pool 8 (Hepi Lake): Control structures on the north and east ends were repaired in Dec 1998. As spring runoff increases the pool level, water should be diverted to fill Pools 5, 5A, 6, 7 and 7A (with 5 and 7A as the priorities). If excess water exists after filling these pools water should be diverted out of 7A through its north structure. Pool 8 should be lowered to 1170 to increase the vegetation in the pool.

Pool 9: If possible maintain a 2 - 3 foot level in this pool (no greater than 1164.5) to allow for vegetative growth around the edges.

Pool 10: Lower to an elevation 0f 1172.25 to encourage vegetation growth to maintain its highest use as a semi-permanent wetland.

Pool 11 (West White Lake): Maintain depth at 4 to 4 ½ feet to slow cattail invasion. If necessary pump water to Pool 12 to keep from flooding County Road 5. Maximum level should be 1150 for cattail control and no higher than 1151.50 to reduce impacts to County Road 5. To allow drop in East White Lake, block structure after spring runoff.

Pool 12 (East White Lake): Add no water to this pool unless there is a need to pump water from Pool 11 to protect County Road #5. If feasible allow this pool to drop to as low as possible. Try to move water into Pool 2 especially during the early spring or late summer filling of Pool 1. Allow gradual drying to reestablish cattails and to reduce bank erosion.

Pool 13 (Mann Lake): Maintain at current elevation (1207*) to allow for vegetative growth and invertebrate monitoring. Do not allow the river to flow into the pool. Invertebrate sampling will continue through the year.

Pool 14 (Sprague Lake): Raise elevation to 1214 if possible. in order to maintain a large open water area for migrating waterbirds which will also benefit the sport fishery.

Pool 16 (Horseshoe Slough): Water levels in these pools will be allowed to drop to reestablish vegetation.

5. Location Map

Please see attached Refuge Map on which all management pools are marked.

Submitted By: _____ Date: _____
Refuge Manager

Reviewed By: _____ Date: _____

Approved By: _____ Date: _____

Concurrence: _____ Date: _____

Attachments

TEWAUKON NATIONAL WILDLIFE REFUGE

Pools, Elevations and Acres

Pool No. & Name	January 1, 2002			December 31, 2002		
	Elevation	Surface Acres *	Volume (acre ft.)*	Elevation	Surface Acres *	Volume (acre ft.) *
Pool 1 - Tewaukon	1148.12	1061	8502	1147.67	1056	8026
- Parker's Bay	1145.00	61	66.77	1143.75	26	10
Pool 2 - Cutler's Marsh	1150	247	826	1148	179	381
Pool 2A	1150	12	5	1152	24	46
Pool 3 - Maka Pool	1153.	74	172	1152.75	69	155
Pool 3A	1153	5.03	4.39	1154	8	11
Nickeson Bottoms	1152.80			1152.75		
Pool 4 - River Pool	1158.00	71	127	1156	26	32
Pool 5	1155.5	0	0	1155.25	0	0
Pool 5A	1160	0	0	1160	0	0
Pool 6	1166	1	.5	1163	0	0
Pool 7	1170.30	6	4	1168	0	0
Pool 7A	1175	35.93	31.91	1171	0	0
Pool 8 - Hepi Lake	1174.5	96	405	1170.25	87	196
Pool 9	1165	10	25	1165	10	25
Pool 10	1173	5	7	1172.25	4	4
Pool 11 - West White Lake	1149.80	69	160	1148.50	52	81
Pool 12 - East White Lake	1147.50	100	439	1148.15	102	504
Pool 13 - Mann Lake	1207	46	164	1205	42	75
Pool 14 - Sprague Lake	1212.85	189	1409	1212	184	1250
Pool 16 - Horseshoe Slough						
- Pool 1 (A Pool)	1206	16	10	1206	16	10
- Pool 2 (B Pool)	1206	44	120	1206	44	120
- Pool 3 (C Pool)	1206	10	30	1206	10	30
- Pool 4 (B West)	1206	45	115	1206	45	115
- Pool 5 (B North)	1206	23	32	1206	23	32
- Pool 6 (C North)	1206	4	1	1206	4	1
- Pool 7 (C South & C East)	1207	17	31	1206	17	31

- *1998-99 Pool acreages and volumes that were taken from a table calculated from information gathered during recently completed surveys of pool depths which were mapped for refuge management purposes. There are currently no functional gauges on pools that relate to mean sea level. Whole numbers (i.e. 27) are from expanded area tables from data collected in 1997.

WATER USE REPORT/MANAGEMENT PLAN
SHORT FORM

Storm Lake NWR, Sargent County
Station Name

Summer, 2001
Date Of Inspection

Declaration of Filing: 8/30/37
Water Right No.

Drainage ditch (legal)
Source(s)

Several
(522 acre-feet storage)
(900 acre-feet seasonal)

Means of Diversion Uncontrolled
Rate Unknown

Water Diverted: Yes___ No_X_

Water Level est 654 acre-feet
(Elevation or Est. Storage Amount)

*Impoundment(s): Yes___ No_X_

*Well(s):
Free Flowing none gpm
Pumped_____ gpm

Type of Use:
Surface Irrigation_____
(Crop)_____
Fish & Wildlife X Virtually no public use
Stock_____
Domestic_____
Other_____

Overall Climatic Conditions: 2002.was a drier year than recent years. .

Condition of Facilities: A diversion dam at the head of the feed ditch serving Storm Lake washed out well before 1976. Apparently someone decided it wasn't worth repairing. The town dug a ditch beside the existing structure to allow for flood waters to move out of the town. At the end of 1997 the town placed a culvert with flap gate at an agreed elevation by a special use permit with the refuge manager. The culvert is well above the existing structure and will allow flood waters to be move out with out impacting the water right. The ditch through the golf course was also cleaned in 1997 through a special use permit to facilitate removal of flood waters. At that time the Golf Course placed 2 new bridges on the fee title property with out notification of the refuge. An agreement with the Service was signed to mitigate the mowing of the fee title property with no mow areas along the golf course edges for wildlife was signed in 1999. A right-of-way for the four bridges is still in progress.

Proposed Water Program: No water management capability is present. Water runs down the ditch into the lake to an unknown degree each spring. Water did fill Storm Lake in 1993. Current high waters and overland flooding have resulted in the feeder ditch becoming an outlet for the water in Storm Lake into the legal drain.

Comments: The lake serves as an excellent waterfowl loafing sanctuary with good use by snow geese, canvasbacks, redheads, lesser scaup, and tundra swans. Water levels fluctuate on their own. If active management was initiated, some degree of improvement might be gained by a cycle of draw down management. It is questionable if the benefits would be worth the costs for Storm Lake alone. However, when you look at the other three wetlands to the south we should continue to work with Ducks Unlimited and put the Mini Joint Venture back on tract. The Golf Course Association of Milnor which at one time requested lake water to irrigate portions of the Storm Lake Golf Course has found a well water source. The Association was granted a conditional water right, junior to that of the FWS.

Douglas Staller, Refuge Manager — 4-10-03 Date